INTRODUCTION

1. The statement of requirement is at annex A.

2. This contract is to examine ships meteorological records in the archives at Bracknell and Public Records Office Kew. to see whether all data had been transferred to the Marine Data Bank at the Meteorological Office.

3. Interest is focused on three specific periods where data is short, 1854 to 1900, 1910 to 1920 and 1936 to 1948. This report covers the latest period 1936 to 1948.

4. The archives hold four types of marine recordings:
   Warship Meteorological Log Books - there are 812 covering this period in the archives at Bracknell.
   Merchant Ship Meteorological Log Books - there are 3,795 covering this period in the archives at Bracknell.
   Merchant Ship Met Forms - there are 10,887 covering this period at Bracknell.
   Warship Deck Logs - there are 27,661 covering this period at Kew.

MARITIME ACTIVITY 1936 to 1948

5. The logs clearly illustrate maritime activity at that time and reaction to world events.

Warships

6. In 1936 the Fleet was supporting British interests in:
   A. China Sea based in Hong Kong.
   B. East Indies based in Singapore.
   C. Indian Ocean based in Trincomalee, Ceylon.
   D. Mediterranean based in Malta and Gibraltar.
   E. South Atlantic based in Simonstown, South Africa.
   F. West Indies and Western Atlantic based in Bermuda.

7. The nineteen thirties were enjoyable years in the Navy. Gunboat diplomacy and political strategy required sea power to be seen, not out of sight, at sea. From 1936 to 1940 warships spent a large proportion of their time in harbour. Regulations required Naval Officers to work onboard only when duty required. Sporting facilities were extensive and travel devoid of bureaucratic restrictions. Base ports attracted 'the fishing fleet', unattached daughters sent to visit relatives, friends or parental contacts to 'catch' an eligible husband. When ships did venture out for spring or autumn exercises they visited the same standard ports on station. The 'fishing fleet' followed. Meteorological observations pre-war repeatedly cover much the same ground.

8. By 1940 the pattern of Naval activity had changed dramatically
warships were redeployed to protect essential seaborne supply routes and the convoy system was underway in earnest. The next two years give a wealth of meteorological observations. The bulk of observations came from smaller escorts and Armed Merchant Cruisers continually at sea protecting convoys. Capital ships left their defended anchorages, normally only to take transit or engage in set battle pieces.

9. Towards the end of the war and post war years warship activity returned in strength to the Indian and Pacific Oceans.

Merchant Ships

10. Trade pre-war extended world wide with regular traffic eastwards to the Middle East, Far East and Australasia. Westwards and southwards trade flourished with South Africa, South America, Canada and The United States east and west coasts. Whaling ships brought observations from southern latitudes.

11. Observations ceased from all merchant ships during the war years but resumed afterwards and by the end of 1946 were back to previous levels of reporting in former trade routes.

METEOROLOGICAL LOG BOOKS

Warship

12. Large warships or the senior ship of a squadron carried qualified Meteorological Officers from the Instructor Branch of the Royal Navy. Observations were from precision instruments carried by these ships.

13. Annex C shows an example from a typical log. Met Officers did not normally take observations during the hours of darkness and therefore most logs record observations only three times a day usually 0800, 1200 and 1800. However some logs do contain considerably more observations than this normal standard, as shown in annex C1.

14. It is clear that sometimes other duties conflicted with meteorological observations and in one Log the Met Officer records his frustration with conflicting demands between being Flight Deck Officer controlling movement of aircraft and taking his readings.

15. Quantity varies greatly. VALIANT's log volume 8 is an example of a log with a large amount of excellent information; photographs of clouds, copies of weather forecasts, barograph papers, accounts of windfinding by shell, records of upper air temperature and diagrams of weather maps as well as standard observations.

16. There are some interesting accounts of how the weather affected actions with the enemy (an example is at annex G). Occasionally something of more general met interest is recorded. BERWICK Mar 39 Log includes a cutting from the Times recounting the loss of Empire Flying boat The Cavalier, with three lives, due to icing in the carburettors.
17. Annex H shows a page from SUFFOLK's log S9 with an account of a lunar rainbow.

18. 1,042 Warship Met Log Books from the archives at Bracknell were examined, 812 covered the period of interest. The Data Bank lists HM ships under series number 204 and log book number 32768. In the archives each ship has its own archive code i.e. AJAX - 'AX1' 'AX2' etc.

19. Examination of each log book showed not all observations had been keyed. The policy appears to have been to take only 3 or 4 for each day whatever number was available. It is estimate that some 15,000 extra observations could be found if all available observations were now required. Annex B shows where these log books are stored in the archives.

20. Only 8 logs had not been keyed at all. Three because of lack of geographical positions but it was not evident why the others had not been keyed.

21. The number of observations keyed are pencilled in the back cover of each log. Researches showed:

   101,872 observations noted as keyed
   95,499 observations listed by the computer as keyed
   6,373 unaccounted

Merchant Ships

22. A proportion of merchant ships join the VOF (Volunteer Observer Fleet) either by invitation from the Met Office or by the shipping company volunteering its services. Vessels are supplied with precision instruments from the Met Office and a Meteorological Log Book. Records from these observations are recorded in the Data Bank under the heading of 'selected ships'.

23. Annex D shows an example of a Merchant Ship Meteorological Log. Annex B shows where they are stored in the archives. 3,795 log books were examined. The Data Bank lists these under series 203, 205 and 207. All observations had been keyed, under log numbers 19020 to 19279 for the period 1936 to 1939, and 1 to 3536 for 1945 to 1948.

METEOROLOGICAL FORMS

24. Non selected merchant ships or Auxiliary Reporting Ships as they are known by the Met Office Marine Branch, record observations on 'Met Forms', a single sheet of paper allowing four sets of observations each day. An example is at annex E. These ships use their own instruments supplied from company sources.

25. 10,887 Met Forms covered the period with archive log numbers from 33757 to 44644. Only the Met Forms after the war years, numbers 43001 to 44644 had been keyed. Numbers 33757 to 43001 contain data for the period of interest and have not been keyed. This gives some 520,000 observations available to add to the Data
Bank. Annex B shows where they are stored in the archives.

26. In addition, a bunch of loose Met Forms were discovered, forwarded by Australian and New Zealand Merchant Ships sailing the Pacific and Indian Oceans between 1945 and 1948. Met Forms had been keyed but W/T transmission forms from other ships but not accompanied by a Met Form, had not. This latter source could yield some 3,000 additional observations mostly from the southern hemisphere to add to the Data Bank.

DECK LOGS

27. Warship deck logs are forwarded to the Public Records Office at Kew when they are completed. Merchant ship deck logs reside in shipping company offices and are not kept by all companies.

28. Weather observations are recorded at the end of each watch at sea: 0400, 0800, 1200, 1600, 1800, 2000, 2359. The geographical position of the ship is recorded three times daily: 0800, 1200, 1600. An example is given at annex F.

29. 27,661 Deck Logs covered the period of interest, archive numbers 100697 to 128358, all were examined. None of the observations had been keyed into the maritime data bank.

31. Some 290,000 observations with geographical positions are available from Deck Logs to add to the data bank. If the ship’s position were interpolated between 1600 and 0800 to give all ‘end of watch’ observations a geographical position, a total of some 600,000 new observations could be keyed into the data bank.

32. This calculation does not include observations from Deck Logs where a Meteorological Log Book was kept and the data has been keyed.

MARITIME DATA BANK

33. Checks of all types of logs with data already recorded in the data bank showed an average of 8% keying errors in transferring data. The most frequent error being in changing local time to Greenwich Mean Time. All logs at sea are kept in local time. Most errors were small but errors crossing midnight could lead to a 24 hour error if the time was changed but not the date.

SUMMARY OF OBSERVATIONS AVAILABLE

34. The following observations could be added to the Data Bank:

Warship Met Log Books (Bracknell) 6,373 noted in the back of the log book as keyed but not found in data bank.

Warship Deck Logs 290,000 not keyed at all. 600,000 if ship's position is interpolated.
Merchant Ship
Met Forms 520,000 not keyed at all.
(Backnell) 3,000 Australian & New Zealand

Total 834,373 or 1,144,373 if ship’s position is
interpolated.

Additional Data expressed by global area:

<table>
<thead>
<tr>
<th>Log</th>
<th>Atlantic</th>
<th>Med</th>
<th>Indian</th>
<th>Ocean</th>
<th>Pacific</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>North</td>
<td></td>
<td>North</td>
<td>South</td>
<td>North</td>
</tr>
<tr>
<td>Warship Met Logs</td>
<td>45%</td>
<td>5%</td>
<td>22%</td>
<td>12%</td>
<td>8%</td>
</tr>
<tr>
<td>Warship Deck Logs</td>
<td>43%</td>
<td>6%</td>
<td>16%</td>
<td>17%</td>
<td>9%</td>
</tr>
<tr>
<td>Merchant Ship Met Forms</td>
<td>30%</td>
<td>25%</td>
<td>15%</td>
<td>11%</td>
<td>10%</td>
</tr>
</tbody>
</table>

QUALITY

35. Met Log Books were completed by specialists in the field of meteorology. Observations were of good quality taken from precision instruments. Notes on instrumentation are in the front covers. Annex C2 shows notes from a warship. Annex C3 is a particularly interesting report from a Met reporting officer typical of reports sometimes included in logs early in the period.

36. Their logs were assessed in the Royal Navy’s case by the Director Naval Meteorology and given a grading, annex C4 is an example of the certificate attached to the log before forwarding to the Met Office. The Met Office’s own Marine Branch assessed Merchant Ship Met Log Books with a certificate attached to the log as seen in annex D1. A VOF officer achieving 18 years high standard of reporting received a presentation baraphor. This custom continues today.

37. Observations in Deck Logs and Met Forms have been made by professional Mariners but with ships instrumentation. Nevertheless, the quality is considered satisfactory by the Met Office Marine Branch. Instruments are frequently checked by Port Meteorological Officers world wide in an internationally linked VOF organisation.

38. Deck Logs were kept in 'rough' throughout this period and neatly copied in ink in the fair log the following day by the Navigating Officer or his assistant. A small number of copying errors may therefore have been made. Wind speed and direction would be estimated by looking at the height and direction of the waves. An experienced eye would give +/-10 degrees and +/-5 knots accuracy. Barometric, wet and dry readings would be from portable instruments, and temperatures from engine room intakes.

39. Both the Merchant Service and the Royal Navy had allowances paid above and below specific temperatures. The Royal Navy gave
free issues of 'limers', a popular thirst quenching scurvy deterrent drink, in tropical climates. However, whilst there may have been incentives to adjust readings, 'Pussers' of the Royal Navy and 'Pursers' of the Merchant Marine, who accounted for these perks guarded the public or company purse with greater fortitude than their own. The legal status of deck logs and accuracy were respected.

40. Quality standards are assessed as:

Meteorological Log Books - completed by warship and merchant ships using precision, well calibrated instruments accurately read and recorded.
Deck Logs and Met Forms - completed by ships using their less precise instruments satisfactorily calibrated accurately read and recorded.

KEYING COSTS

41. Costs would depend on the ease and speed of extracting the data. An assessment is as follows:

Met Forms - Single sheets that could be temporarily removed in their boxes from the archives at Bracknell, to be processed at a site convenient to the contractor. This should reduce the time and cost factors.
Warship Deck Logs - Cannot leave the archives in Kew. Limited space and access for the contractor increasing time and cost.
Warship Met Log Books - Could be temporarily removed from the archives at Bracknell to reduce cost and time.

RECOMMENDATION

42. It is recommended that:

A. Met Log observations 6,373 are disregarded as too time consuming and costly to resolve.

B. The following observations be keyed into the data bank in the priority order:

a. Merchant Ship Met Forms 520,000
b. Warship Deck Log 600,000 with interpolated positions
c. Warship Met Log 15,000
Total 1,138,000

I agree since a) is checkout and c) are only daytime.
43. It is possible to increase the 585,599 observations in the Data Bank threefold, if the recommendations are implemented.

OTHER SOURCES WORTH INVESTIGATING

44. Marine observations are also held by the following:

B. Defence Research Agency - sea temperature gradients.
C. Hydrographic Office Taunton - Surface ship, submarine and maritime aircraft bathythermograph records.
D. Engine Room Registers kept at MOD(Navy) Bath.
E. Merchant Ship Deck Logs held by shipping companies.

Martin H Rhodes
Management Information Services
10 March 1994

Annexes: A. Contract Requirements.
          B. Plan of Bracknell Archives.
          C. Sample of a Warship Met Log Book page.
          C1 Sample of a second style of Warship Met Log.
          C2 Notes on warship instrumentation.
          C3 Warship Met Officer's report.
          C4 Director of Naval Met certificate of inspection.
          D. Sample of a Merchant Ship Met Log Book page.
          D1 Met Marine Branch certificate of inspection.
          E. Sample of a Merchant Ship Met Form.
          E1 Reverse side of Merchant Ship Met Form
          F. Sample of a Warship Deck Log page.
          G. Weather and enemy action.
          H. Lunar rainbow.
          I. Genuine 1937 'Fag end'(original report only).
Specification of requirements for identifying sources of additional Marine Logbook Data.

1. Background

It has been shown from listings of ship numbers and call signs in the Marine Data Bank that certain Logbooks in the Meteorological Office Archives have not been keyed.

Some of the Logbooks, not keyed, have a unique character presentation to describe the wind direction. These records cannot be found in the digitised data bank and it seems probable that many years ago a decision was taken not to key these data.

The Met. Office holds about 900,000 Meteorological Logbooks from Royal Navy and Merchant ships. A preliminary search of the Public Records Office at Kew identified 160,000 Navy Logbooks (Captains Logbooks). Most Naval ships have two Logbooks - Captains Log and the Met. Log. It is necessary to know if the meteorological records at Kew are duplicates of the records in the Met. Office. The largest proportion of these Logbooks record data from 1950 onwards, but there are significant numbers back to 1954.

Preliminary comparisons of observations made at the same time in the Captains Logbook and Meteorological Logbook occasionally show significant differences in instrumental readings.

The Met. Office Logbooks are catalogued in ship and time order and there is a comprehensive index which describes Ship names, routes and times for all ships logbooks. The indexing of the records in the Record Office at Kew is no as comprehensive for early years, but after 1939 the logbooks are grouped by year and ship.

The years before 1900 and the War years - 1911 to 1920 and 1936 to 1948 are noticeably short of data in the Marine Data Bank and it is possible that observations from these times are only available from the Navy Logbooks archived at Kew.

There is a great deal of international interest in finding additional sources of marine meteorological data. In particular the USA's National Climate Data Center (NOAA) is very keen to obtain as many data as possible to enhance the Comprehensive Ocean Atmosphere Data Set - COADS. The Met. Office as part of WMO has a commitment to assist in the search for additional data.

A contractor will be employed to key the observations from the Logbooks, if significant numbers of additional data are found.
2. Requirements

The Archives at the Met. Office and at Kew are to be searched for meteorological observations which have not been copied to the Marine Data Bank. Logbooks are to be categorised so that a proper assessment can be made as to whether any additional data discovered should be keyed and added to the Data Bank.

The following routine will be used to categorise the Logbooks.

In the Met. Office Archive.

2.1.1 A list of the Logbook numbers contained in the Marine Data Bank will be made available. The shelves should be searched, and Logbook numbers not on the list of keyed books should be noted as "Not Keyed".

2.1.2 The number of observations keyed from each Logbook in the Marine Data Bank will also be made available and this should be compared with the number of observations in the Logbook in the Archive. If only part of a Logbook has been keyed, the Logbook should noted as "Part Keyed". Otherwise the Logbook will be noted as "Keyed".

2.1.3 "Not Keyed" and "Part Keyed" Logbooks will be further classified to indicate whether additional data are worth keying. This is a learning exercise and the decision will be made initially by Mr Jackson and the scrutineer, after examination of the logbooks.

2.1.4 Logbooks which contain the wind direction as a diagram should be identified as containing "Wind Characters".

2.1.5 If there are any further classification problems, they should be discussed with Messrs Jackson and/or Parker.

2.1.6 The number of observations and the numbers of logbooks containing observations to be keyed are to be grouped into years and Ocean areas - North Pacific, South Pacific, North Atlantic, Indian Ocean.

At the Public Records Office, Kew.

2.2.1 The observations should be compared with observations in the Marine Data Bank. Listings of observations from the Data Bank will be available for comparison.

2.2.2 Methods of making the observations should be noted.

2.2.3 Significant differences between observations made at the same time should be noted.

2.2.4 The ships position is given only three times in the day in the Captains Logbook. It will be necessary to find a method of obtaining the position when an observation is made.

2.2.5 The number of observations and the numbers of logbooks containing observations to be keyed are to be grouped into years and Ocean areas - North Pacific, South Pacific, North Atlantic, Indian Ocean.
METEOROLOGICAL INSTRUMENTS ON BOARD.

BAROMETER.
Maker's Name and M.O. No. California 236/32.
Height of Columns above Sea Level 27.5
Standard Temperature 215.9° F. at 1000 msl.
Position Captains' Cabin — off deck.

BAROGRAPH (Open Scale).
Maker's Name and M.O. No. Short and Palmer 954/14.
Position Flushing Room — from Bridge.

THERMOMETERS FOR AIR TEMPERATURE.
Dry—Maker's Name and M.O. No. California 34565/16.
Height above Sea Level from to

Wet—Maker's Name and M.O. No. California 34565/16.
Height above Sea Level of Deck from which Observations are made 55.7 ft. on 23.7.26. 49.5 ft. on 28.7.26.

ELECTRIC PSYCHROMETER.
Maker's Name and M.O. No. Castilla 27.54.
Height above Sea Level of Deck from which Observations are made

THERMOMETER FOR SEA TEMPERATURE.
Maker's Name and M.O. No.

THERMOGRAPH (Distant Reading).
Whether Dry and Wet Bulbs or Dry Bulb only Wet and Dry Bulbs.

Table: Barometer

<table>
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<th>Barometer</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height</td>
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<td>15</td>
<td>15</td>
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</tbody>
</table>

Table: Beaufort Wind Scale

<table>
<thead>
<tr>
<th>Beaufort Number</th>
<th>Speed of wind in knots at a length of 30 ft.</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Less than 1</td>
</tr>
<tr>
<td>1</td>
<td>1-3</td>
</tr>
<tr>
<td>2</td>
<td>4-6</td>
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<tr>
<td>3</td>
<td>7-10</td>
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<td>4</td>
<td>11-15</td>
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<td>16-20</td>
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<td>21-27</td>
</tr>
<tr>
<td>7</td>
<td>28-35</td>
</tr>
<tr>
<td>8</td>
<td>36-40</td>
</tr>
<tr>
<td>9</td>
<td>41-47</td>
</tr>
</tbody>
</table>

THE BEAUFORT WIND SCALE.

DOUGLAS SEA AND SWELL SCALE.

<table>
<thead>
<tr>
<th>Sea</th>
<th>Low</th>
<th>Moderate</th>
<th>HWY</th>
</tr>
</thead>
<tbody>
<tr>
<td>SWELL</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TERS TO INDICATE THE STATE OF THE WEATHER.

1. Slight sky (less than 1/10 covered). Slowly.
3. Sky generally cloudy (more than 5/10 covered). Slowly, i.e., rain and snow together.
4. Dense, hail, or rain.
5. Wet and without rain falling. Thunder.
7. Rain and snow.
8. Exceptional visibility (general condition of the atmosphere).
9. Rain.
11. Intermittent.
12. Line Squall.
13. Dry.
14. Lightning.
15. Mist.
16. Overcast sky (1/10 covered).

TABLE FOR FINDING RELATIVE HUMIDITY.

<table>
<thead>
<tr>
<th>Humidity</th>
<th>°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>75</td>
</tr>
<tr>
<td>Moderate</td>
<td>85</td>
</tr>
<tr>
<td>HWY</td>
<td>95</td>
</tr>
</tbody>
</table>

LETTERS TO INDICATE THE STATE OF THE WEATHER.

1. Slight sky (less than 1/10 covered). Slowly.
3. Sky generally cloudy (more than 5/10 covered). Slowly, i.e., rain and snow together.
4. Dense, hail, or rain.
5. Wet and without rain falling. Thunder.
7. Rain and snow.
8. Exceptional visibility (general condition of the atmosphere).
9. Rain.
11. Intermittent.
12. Line Squall.
13. Dry.
14. Lightning.
15. Mist.
16. Overcast sky (1/10 covered).

Remarks:

Sailors marked with a red spot on the mast must be given the red signal flash. The signal is never to be given from the cockpit, and may not be, in any case, pronounced loudly from the loran or tender to the nearest ship.
Appendix to "A&A" Letter No. 50 dated 18th October, 1939.

REPORT ON METEOROLOGICAL WORK - H.M.S. "A&A".

Meteorological Organisation on "A&A".

No Meteorological Office has yet been constructed but the Meteorological Officer has been given the use of the Plotting Room when not required as such, and he is usually able to work there undisturbed.

No Pilot Balloon Shelter has been provided. The hydrogen cylinder in use is kept underneath the Catenary Platform and the balloon is filled afloat this platform. In light winds this can be done reasonably accurately, very little final adjustment being required in a sheltered position, but with strong or beam winds, it is found that a considerable amount of hydrogen is wasted, due to being unable to estimate when the balloon is correctly filled.

The Meteorological Officer has been given the part-time assistance of an Able Seaman from part of ship, who has been taught to plot the synoptic charts and to look after the care and maintenance of the various instruments.

Supply and Evolution of Instruments.

H.M.S. "A&A" is fitted with Barrow-in-Furness, and on being taken over by the Admiralty was supplied with the following instruments:

1. Mercurial Barometer - in the Admiral's Cabin.
2. Distant-Reading Thermograph - on the forecastle of the Crow's Nest with the Recorder in the Chart House (by Admiralty specification).

After commissioning at Portsmouth, the remainder of the Meteorological Instruments (Pilot balloon, Airspeed Indicator, Pressure gauge, strain gauge meter, aneroid, etc.) were supplied on demand.

The open scale barograph and Marconi Wind Speed Recorder, graduated to 8 knots, were not supplied until very shortly before leaving for the Mediterranean, and on line was available for their erection then.

On arrival at Malta it was arranged that the Dockyard should erect the Wind Speed Recorder. A consultation took place between the Dockyard, a representative from the Malta Meteorological Office and the Ship's Meteorological Officer as to the most suitable place for this. The Anemometer head was erected on a bracket on the forecastle and the Wireless was connected with the Recorder in the Plotting Room. The disadvantage of this position is that if it is required that the topmast be struck, it will still be necessary to first remove the wind Vanes, etc. This is not very satisfactory in view of the fact that the topmast is so designed as to be enabled to be struck rapidly. The Dockyard representatives thought, were of the opinion that this would have to be accepted, due to lack of alternative positions. They were not prepared to extend the bracket on which was mounted the pressure link and recorder, or mount it on top of the Crow's Nest, which positions were preferred by the Ship's Meteorological Officer.

Opportunity was also taken whilst at Malta of mounting the open scale barograph on the after ship bulwark at the bulwark of the Plotting Room.

Assistance was given by the Malta Meteorological Office in setting up the Recorder and seeing that it was functioning correctly when the work was completed.

Marconi Wind Speed Recorder.

This instrument was mounted on the after part of the ship to the bulwark at the bulwark of the Plotting Room, being the only position suitable without rearranging the layout of the other instruments already there. No trouble has been experienced in the siphon pen losing suction due to movement of the pen in the trough (wide Periodical Letter 9/92, pointed twice). It has been found, however, that the ink in the trough is inclined to overflow in even quite moderate gales, of say 10, and run all over the chart.

The D.R. Thermograph and D.S. Barograph have been mounted at these positions.

Distant-Reading Thermograph.

On many occasions it has been found that the masts and rigging of the ship and the ship's deck are much warmer than the actual wind temperature, and consequently the wind temperature reading will be higher or lower than the actual wind temperature. The problem of determining the wind temperature is therefore one of determining the wind temperature to the nearest degree centigrade and this is not possible. It is not possible to determine the wind temperature to the nearest degree centigrade, and was only of a general character.

The ship returned to the Mediterranean at the beginning of September. Owing to our other W.F. commitments, Nellida synoptic reports only have generally been read. While stationed in the Eastern Mediterranean, forecasts have not been issued unless more information has been available or when reliability could be placed on their value.

Owing to his other work in the ship, the Meteorological Officer has not been able to enter the necessary information regularly in the Meteorological Log, or at regular times. On most days, the Meteorological Officer has logged two observations himself (marked with a red cross), the remainder being copied from the Deck Log.

No weather of extraordinary interest has been experienced. The synoptic charts of August 30th - 31st and September 1st - 7th show the path followed by two tropical disturbances in the West Indies and North America, the latter doing considerable damage in the vicinity of Key West. The wind speed and gusty condition recorded from September 15th - 20th shows the gales experienced by a ship at the Detached Etoile at Gibraltar during a war zone.

During long sea passages a pilot balloon was sent up daily as a routine.

No attempts were made to put in the fronts on the chart owing to their being such a long distance away from the ship.

Method used for Pilot Balloon Observations.

The two Searchlight sights on the Fore Bridge, stabilised for azimuth and elevation, and fitted with Kerr and Stroud binoculars are used for following the pilot balloons. The sight on the weather side is trained on approximately the reciprocal bearing of the balloon, and is left on the horizon. At the moment of each observation, the angle of depression or elevation due to ship's roll is read off, and subtracted or added to the elevation observed. This method has been used in quite moderate gales, and good results have been obtained, no smoothing out of the curve being required in the majority of the cases.

If the balloon crosses the ship, it is necessary of course to cross over from one sight to the other. The delay caused has to be accepted, but not more than one observation should be missed.

A personnel of three only is required for this method one at each sight and a Telegrapher, who acts as recorder and also reads off the observed elevation and bearing.
Abstract of Ship's Meteorological Log in Naval Division

Meteorological station: American & West Indies
(St. American Division)

Class of Log: A

Ship: H.M.S. "JAG" 6

Meteorological officer: Lt. (0) R.T. Shaw, R.N.

Period covered by Log: 7.11.36 - 3.2.37

Ports visited: Valparaiso, Juan Fernandez, Puerto Corral,
Puerto Montt, Pt. Yates, Lust Harbour, Hia. Bay, Port
Stanley, Magellan, Port Stanley, Falkland Isles,
Grytviken (St. George's), Buenos Aires.

<table>
<thead>
<tr>
<th>Date</th>
<th>Position</th>
<th>Weather of special interest</th>
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</thead>
<tbody>
<tr>
<td>12.11.36</td>
<td>Valparaiso</td>
<td>Thick fog.</td>
</tr>
<tr>
<td>8.1.37 - 11.1.37</td>
<td>Falkland Is. to S. Georgia</td>
<td>Ship steaming in a depression.</td>
</tr>
<tr>
<td>11.1.37</td>
<td>53°35'S, 37°4'E</td>
<td>Fog, icebergs.</td>
</tr>
<tr>
<td>17.1.37</td>
<td>54°1'S, 42°8'W</td>
<td>Thick fog 0630 - 0745.</td>
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</tbody>
</table>

Pilot Balloon Anomalies


Meteorological Officers: R.T. Shaw, Lt. (0)

Commanding Officer: [Signature]

Date: From [ ] To [ ]

H. 243 (late s. 329) (Established November, 1928)
(Revised March, 1944)

H.M.S. JAG

Station: American & West Indies
South American Division

METEOROLOGICAL LOG

for H.M. Ships

Period: 7th November 1936, to 3rd February 1937.

D 32061-1 100 87
### Meteorological Log kept on board

<table>
<thead>
<tr>
<th>DATE</th>
<th>Weather</th>
<th>Wind</th>
<th>Pressure</th>
<th>Temperature</th>
<th>Humidity</th>
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</table>

*Please give Readings of the Ship's Barometer, say at Noon, at various times during the voyage noting whether it is considerable or not.*

---

### Captain's Log from Los Angeles to Honolulu

**Annex D**

<table>
<thead>
<tr>
<th>Date</th>
<th>Time of Observation</th>
<th>Wind Direction</th>
<th>Wind Speed</th>
<th>Wave Description</th>
<th>Remarks</th>
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</tbody>
</table>

*In this event the other (log entries) being before the ship is taken into one and its error can be commence before commencing.*
When this Log is sent into the Meteorological Office at the end of a voyage, demand should be made for all requirements for the next voyage.

How was the screen containing the dry and wet bulbs situated?

Screen portable, moved to weather side prior to observations.

If screen is portable and moved to weather side before observations are taken, this should be clearly indicated here.

Where was the Meteorological Office barometer located?

On ship's house, Bath Head.

Height of Rain Gauge above Sea Level?

feet.

In the space marked—Names of Observing Officers—the names of all those who have assisted in keeping the Log should be noted.

FOR OUTWARD PASSAGE.

Was the Ship's speed measured by Log or Revolutions?

Reduction

State of Loading, Light or Deep?

See first page of each passage.

Was the Propeller immersed?

FOR HOMEWARD PASSAGE.

Was the Ship's speed measured by Log or Revolutions?

Reduction

State of Loading, Light or Deep?

See first page of each passage.

Was the Propeller immersed?

General Remarks as to reliance which may be placed on current observations:


# Synchronized Weather Observations Over All Oceans

## Ocean Current Observations

### Year

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<th>Day</th>
<th>Month</th>
<th>Day</th>
<th>Month</th>
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### Month

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### Days

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<td>13</td>
<td>14</td>
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</tbody>
</table>

### Observations

- **Temperature**: 20°C
- **Humidity**: 80%
- **Wind Speed**: 10 knots
- **Wave Height**: 2 meters

### Remarks

- **Weather Conditions**: Cloudy with occasional rain.
- **Sea State**: Rough

---

*For further information regarding the weather, refer to the Marine Observation Handbook.*
ON HIS MAJESTY'S SERVICE

The Director,
Meteorological Office (M.O.1.),
Air Ministry,
Kingsway,
LONDON, W.C.2.

[Signature]

The above is an extract from a cablegram sent by Mr. [Name], of the Meteorological Office, to the Air Ministry, London, on [Date]. The telegram contains details of a meteorological event and requests for further information. The document is marked with official stamps and includes a letterhead from the Meteorological Office.

Additional Remarks:

The Minister of Defence's cablegram is marked with a blue stamp and includes a reference to a previous document. The telegram is addressed to the Air Ministry and contains a request for assistance in a specific matter. The cablegram is signed by Mr. [Name], who is responsible for the Meteorological Office.

Particulars of Instruments—(Please write with ink in each case where used)

[Table with columns labeled: Instrument, Make, Serial No., Last Revised, etc.]

Date: 1st March 1939

[Stamp: Air Ministry]

[Stamp: Meteorological Office]
### H.M.S. "Narad" Wednesday 21st day of May 1944

<table>
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<tr>
<th>Time</th>
<th>Log (Reading)</th>
<th>Distance from Water</th>
<th>True Bearing</th>
<th>Wind Direction</th>
<th>Corrected Compass</th>
<th>Temperature</th>
<th>Remarks</th>
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</table>

**Remarks**
- LEAVE GRANTED TO SHIP'S COMPANY
- F.M. to N.W. by 215° 30' north.
- F.M. to N.W. by 215° 30' north.
- F.M. to N.W. by 215° 30' north.
- F.M. to N.W. by 215° 30' north.
- F.M. to N.W. by 215° 30' north.
- F.M. to N.W. by 215° 30' north.
- F.M. to N.W. by 215° 30' north.
- F.M. to N.W. by 215° 30' north.
- F.M. to N.W. by 215° 30' north.
- F.M. to N.W. by 215° 30' north.

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**Anchor Bearings**

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**Annex F**
**H.M.S. Sappho**

**Time** 30th November 1923

<table>
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<tr>
<th>Time</th>
<th>Position</th>
<th>Wind</th>
<th>Current Direction</th>
<th>Current Force</th>
<th>Tidal</th>
<th>Air Temperature</th>
<th>Pressure</th>
<th>Remarks and Upper Air Data</th>
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</tbody>
</table>

**Remarks and Upper Air Data**

( Including upper winds from smoke-bank andulin observations, and upper air temperatures and humidity)

**A.M. Forecast:**
Closed at .......... for ....... hours commencing ............

**Lunar Rainbows at 2115:**

![Lunar Rainbow Illustration](image)

**P.M. Forecast:**
Closed at .......... for ....... hours commencing ............

**Appearance to extend from the lunari to the ship's side:**

![Rainbow Illustration](image)
### Flying Conditions

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<th>p.m.</th>
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Note: Delete every "yes" or "no" which is not applicable.

### Weather Conditions

<table>
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<th>Wind</th>
<th>Pressure (Hg)</th>
<th>Temperature (°F)</th>
<th>Dew Point (°F)</th>
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<td>080</td>
<td>29.8</td>
<td>31</td>
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</tr>
</tbody>
</table>

**Forcasts:**

- A high pressure system over Spain will bring warm weather to the area.
- Expect temperatures to rise gradually throughout the day.

**Visibility:**

- Generally good, with occasional light fog in the evening.
- Storms are possible in the late afternoon.

**Clouds:**

- Mostly clear, with occasional light showers.

**Winds:**

- Light winds from the north.

---

**Flying Conditions:**

- Visibility: Good
- Cloud cover: Light
- Weather: Clear

---

**Notes:**

- Delete every "yes" or "no" which is not applicable.
ANNEX 1

Cigarette End

Discoverd in HMS CEYLON Deck Log 16 April 1937.